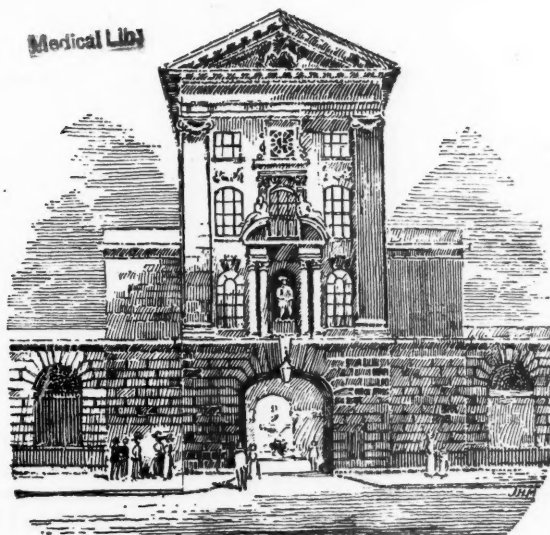


APR 16 1929

ST BARTHOLOMEW'S HOSPITAL JOURNAL



VOL. XXXVI.—No. 7.

APRIL, 1929.

[PRICE NINEPENCE.

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"Æquam memento rebus in arduis
Servare mentem."
— Horace. Book ii, Ode iii.

JOURNAL.

VOL. XXXVI. — No. 7.]

APRIL 1ST, 1929.

PRICE NINEPENCE.

CALENDAR.

Mon., April 1.	— Bank Holiday.
Tues., " 2.	— Prof. Fraser and Prof. Gask on duty.
Fri., " 5.	— Dr. Morley Fletcher and Sir Holburt Waring on duty.
Tues., " 9.	— Sir Percival Hartley and Mr. L. B. Rawling on duty.
Fri., " 12.	— Sir Thomas Horder and Sir C. Gordon-Watson on duty.
Tues., " 16.	— Dr. Langdon Brown and Mr. Harold Wilson on duty.
Fri., " 19.	— Prof. Fraser and Prof. Gask on duty.
Last day for receiving matter for the May issue of the Journal.	
Tues., " 23.	— Dr. Morley Fletcher and Sir Holburt Waring on duty.
Fri., " 26.	— Sir Percival Hartley and Mr. L. B. Rawling on duty.
Tues., " 30.	— Sir Thomas Horder and Sir C. Gordon-Watson on duty.

EDITORIAL.

NATURE is not inclined to be consistent. Dramatic incidents are left unfinished; tense moments are unresolved, and peter out in a feeble lysis. We have had our Great Frost. Wolves turned a Polish school into an alfresco restaurant, and nearer home bucket-fires graced the frozen drainpipe on the Hospital walls. Yet nothing happened afterward worthy of being called a Great Thaw. Journalistic capitals lie unwanted in the compositor's box. The Fountain once more plays, but at any rate spring is coming.

It is the penalty of representing a compact community that no one writes to us about the first signs of spring in Hospital. Where fifty people see the first patient eating a rapidly congealing dinner in the Square, what kudos can "Interested" or "Nature-lover" gain by writing to inform us of it? To see the first geranium at the foot of the plane trees is the privilege of some inadvertent early riser on the Resident Staff, who will be too short-tempered about the whole incident to put any printable thoughts on record.

Still, something should be done about spring. Perhaps some scientist will write claiming to be the first man to show a measurable erythema gained by sun-gazing in the Square, and "Hardy" will counter, establishing a record time for sitting on the stone edge of the Fountain in March. More likely nobody will write at all. Everyone is too busy snatching whatever is therapeutically valuable in the gleams of sunshine, before some power that relegates the infra-red to the limbo where presumably the immodest violet (once, alas, spring's herald) now languishes.

* * *

We learn with mixed feelings that Prof. Le Gros Clark has been appointed to the University Chair of Anatomy tenable at St. Thomas's Hospital. Thus to lose our first Professor of Anatomy is a cause of sorrow, lessened only when we realize the fitness of his return to the Hospital where he began his career, and with which his family has been so long and so honourably connected. We tender him our heartiest congratulations.

* * *

In our January number we published an appeal for subscriptions for the Hard Courts at Winchmore Hill. The Students' Union has received a gift of £450 from the Governors of the Hospital, and £140 from the Visiting Staff. £130 are still wanted. Sir Charles Gordon-Watson has generously offered to give £50 if the students will raise £50 in the course of the coming month. We hope this appeal will aid the Union to hand over its £80 at the appointed time.

* * *

We congratulate the following on their appearance in the list of New Year's Honours:

C.B. (Civil Division): Sir Walter Fletcher, K.B.E., M.D., Secretary of the Medical Research Council.

C.B.E. (Civil Division): Lt.-Col. J. K. S. Fleming, O.B.E., Deputy Director General, I.M.S.

C.I.E.: Lt.-Col. H. H. Broome, I.M.S., Principal and Professor of Surgery, King Edward Medical College, Lahore.

* * *

ST. BARTHOLOMEW'S HOSPITAL WOMEN'S GUILD.

May we take this opportunity of drawing the attention of all our readers to an important Jumble Sale which we are holding on Thursday, May 2nd, in the Club-room of St. Bartholomew's the Great, Smithfield.

This is a special effort in aid of the Reconstruction Fund, and its success will largely depend upon the generous response that we receive to this appeal. We are open and thankful to receive anything which will bring us in from 2d. to £2 2s., and we feel confident that now, as ever, all friends of St. Bartholomew's will rise to the occasion.

Goods will be welcomed any time during April, addressed to Lady Andrewes, c/o Steward's Office, St. Bartholomew's Hospital, or if necessary could be collected by sending a postcard before the 19th of April to Lady Andrewes, at above address.

* * *

The following gentlemen have been nominated to House Appointments from May 1st, 1929:

Junior House Physicians—

Dr. Morley Fletcher	A. M. Roberts.
Sir Percival Hartley	E. G. C. Darke.
Prof. F. R. Fraser	F. A. Richards.
Sir Thomas Horder	J. H. Attwood.
Dr. Langdon Brown	E. G. Recordon.

Junior House Surgeons—

Sir Holburt Waring	J. C. F. L. William-son.
Mr. L. Bathe Rawling	H. Taylor.
Prof. G. E. Gask	A. D. Everett.
Sir C. Gordon-Watson	F. Ward.
Mr. Harold Wilson	W. Buckley.

Intern Midwifery Assistant (Resident) W. J. H. M. Beattie.

Intern Midwifery Assistant (Non-Resident) M. L. Kreitmayer.

Extern Midwifery Assistant { A. Bennett,*
G. C. C. MacVicker.†

H.S. to Throat and Ear Departments W. J. Wilkin.

H.S. to Ophthalmic Department R. G. Anderson.

H.S. to Skin and Venereal Departments { J. S. Hensman,*
A. T. Pagan.†

H.S. to Orthopaedic Department C. F. Watts.

Senior Resident Anaesthetist C. R. Jenkins.‡

Junior Resident Anaesthetists { G. P. Nixon.
V. C. Thompson.

Casualty House Physicians { W. G. Oakley,*
R. H. Francis,*
H. Stark.*

Casualty House Surgeons { C. H. Dale.†
I. Gordon.†
R. D. Robinson.†

W. A. Elliston.*
W. R. Forrester-Wood.†

* 3 months, May. † 3 months, August. ‡ 12 months.
All others for 6 months.

OBITUARY.

CLIVE RIVIERE, M.D., F.R.C.P.



LIVE RIVIERE, whose death from pneumonia on March 6th adds a heavy item to the losses of this revengeful winter, was only 56. The son of a distinguished painter, Briton Riviere, R.A., he was himself artistic in his appreciations and distinguished also, both in character and intellect.

He made a good beginning at the Hospital by winning the Brackenbury Scholarship, and then, having qualified in 1898, joined the Junior Staff as House-Physician to Sir Lauder Brunton. It was perhaps to that prince of healers that Riviere owed some part of the therapeutic optimism which marked his outlook, and which is so precious a gift for one whose life is to be spent in ministering to the afflicted. After his house appointment he served as Casualty Physician, and applied himself to pathology, at first at St. Bartholomew's, and later as Pathologist at "Shadwell" (as the East London Hospital for Children is known affectionately to those who have served it). Here he came under the influence of another master of therapeutics in the person of Dr. Eustace Smith, the Senior Physician, and almost the patron saint of the hospital. With this appointment, followed shortly by election to the medical staff, he began an association with "Shadwell" which was to endure for upwards of twenty-five years.

He was Physician also to the City of London Hospital for Diseases of the Chest for many years, and until his death. Here it was that he developed his experience of thoracic affections, especially phthisis and the treatment of it by artificial pneumothorax. He was among the first to employ that method in this country, and made the subject his own; while his writings on this and allied topics connected with tuberculosis won him a high place in the favour of those best able to appraise them.

It was during his earlier days at Shadwell that I came to know him well and became aware of the many graces that enriched him. Even at this time he showed a leaning towards what was to prove the dominating professional interest of his maturer years, namely, the study of problems set within the chest. I recall his earnest efforts to master the limitations of his own percussion by controlled experiment in the post-mortem room (and I recall also, in passing, that his percussion was executed with a crispness and technical mastery that argued a keen ear for the niceties of tone). At this time, too, he entered zealously upon studies of the opsonic index, then newly introduced into clinical pathology, exhibiting in this and other ways the quick response to new ideas

which was to have so happy an outcome in his successful championing of artificial pneumothorax.

His manner was open and unaffectedly friendly, and though a certain shyness made him appear by nature somewhat grave, his sense of fun was very near the surface, and suffused his lighter conversation with a subdued but ready gaiety. In all his relations he was courteous and kind and gentle, and he has the reward he would have valued. For the feeling sentences which have been written of him are witness to the spell he cast about him, and his memory rests secure in the affection of his friends.

W. P. S. B.

SOME CONTRASTS IN MEDICAL EDUCATION.

*An Address delivered to the Abernethian Society on
March 7th, 1929.*

IN selecting for this address a subject that is concerned with medical education, I may be abusing your kindness in inviting me here to-night. I am conscious of the many times I have heard the remark—"I am tired of discussions on medical education." Those who have perforce to consider the problems of medical education have reason to be tired of it at times, for it is a subject that lends itself to endless differences of opinion—differences that can be settled only by experiment, and experiments in education cannot be undertaken lightly. On the other hand, it is a subject of universal interest to medical men, each of whom is certain—and justly so—that he could improve on the education he received. It is a subject that should be of interest to every citizen, for it is but a particular instance of education in general, and there is no problem of greater national importance. Every citizen, moreover, should be peculiarly interested in the education of medical men, for no one fails to need the skilled assistance of a medical man at some time, and when he is in need of this assistance the occasion is probably a critical one in his life. However, you are all medical men, so that each of you has opinions on the problems of medical education, even if you have never discussed them or never even formulated them.

Every force that is active—and surely medical education is active—whether it be good, bad or merely indifferent, and everything that is worth having is constantly changing, is going through the process of evolution. Life is so short that it is difficult for any one of us to appreciate the significance of the changes that we observe. To do so successfully it is necessary to follow

the changes for some time back and observe the consequences of these changes; to construct mentally a curve of the past showing the process of evolution up to the present time. A close study of the history of medical education is one method of obtaining the necessary evidence, but that is a method that is laborious, dull and often misleading. More vivid light is shed on the process of change by observing the stages that have been reached in a number of schools in different countries—that is, by observing a number of experiments under different conditions. I have no doubt myself of the great value that the opportunities of observing the methods and problems of medical education in different schools and countries have been to me, and I shall try to give you to-night some contrasts in methods and problems that are to be noted in different schools that I have visited lately.

The practice of medicine commenced in prehistoric times and must be nearly as old as man, but medical education is a recent development. The medical man of old learned his profession as an apprentice. He might or might not be an educated man, but his apprenticeship was not necessarily a form of medical education, any more than a plumber's apprentice is educated by his apprenticeship to understand the principles of physics and chemistry, of hydrostatics and hydrodynamics that are applied in the art of plumbing. The apprentice might, however, receive a very good medical education, if his own previous training had been adequate and the physician from whom he learned the practice of medicine willing and able to educate him.

Education in this sense is a function of universities, and it is to the universities that we look for attempts at providing for and stimulating the education of medical men. The practice of medicine has progressed at varying rates before it reached its present state of development, its present state of rapid change, but it is only in the last hundred years that university education in medicine has approached medical practice in its efficiency, or has influenced its progress. The mediaeval universities taught medical men, examined them and gave them degrees, but the doctor's degree was awarded after a training that was essentially theoretical, an exposition of the views of the older authorities. Practical training was ignored, anything that savoured of doing and observing was frowned upon and clinical training was left to the hospitals and their staffs, and these had no connection with the universities. If the physician, who was a product of a university, received a training from his university, though mainly in matters abstract and metaphysical, the surgeon who was practical and used his hands was ignored and was regarded as a very inferior creature.

Since medical education has followed behind medical practice in this way, it is of value to note the direction in which practical medicine has been leading. The blind obedience to authorities and the following of practices based on magic and theory without foundation in observation has gradually given way before the hard facts accumulated by clinical observers unhampered by the weight of tradition. Methods of treatment have been established by trial and error, some to stand the test of time, others to prove disappointing or harmful. This is called empiricism and is a great step forward, but the empiricist does not inquire why—does not clearly define the limitations of his discoveries. Medical practice has progressed beyond the empirical stage; there is on all sides a desire to find out why, to define the limitations, and to establish principles. All the help that can be obtained from the physical and biological sciences is necessary if the desire is to be gratified. From this point of view the practice of medicine is an applied science, or at least there is clearly a desire, an effort to make it an applied science. Unfortunately knowledge is still very scanty, and much practice is perforce still empirical, and some of it merely traditional or even mystical. The desire to make it a science is there, and the effort is frequently there; one necessity of medical education is therefore clear. A training in the biological sciences is essential for the education of a medical man who is to spend his life in practising an applied science based upon them.

If the universities were blind to the advances in medical practice, and negligent of their duties as leaders in medical education, there were independent teachers, usually physicians and surgeons of the hospitals, who gave practical demonstrations and lectures in anatomy, physiology, pharmacology and pathology. Of these there were some who observed facts, formed hypotheses and tested them by experiment—creating sciences instead of traditions. These sciences had attained considerable development before the universities recognized them and accepted practical training in them as part of the course for medical degrees, which they have done only in the last hundred years. Even in 1825, at Edinburgh, where anatomy developed earliest in this country, only a few members of the class actually dissected, the others received instruction by lectures and demonstrations. Practical work in physiology, the preclinical subject for which this country is most famous, has been included as part of the curriculum for less than fifty years. Practical work for students in pharmacology and in pathology are developments of this century.

It is generally conceded now that efficient medical education must include efficient training in the pre-

clinical sciences—those sciences through which the practice of medicine becomes an applied science, and that efficient training in these sciences necessitates opportunities for practical work in observing facts, forming hypotheses and testing by experiment. There are two parties to such an education—the student and the teacher. The student must have been suitably prepared to make use of the course provided; the teacher must be capable of leading the student to observe accurately, and to see the significance of his observations and their limitations. That means that he must be observing and learning for himself in the subjects he is teaching; in the words of Michael Foster, the “teacher must have the means of leading his students along the only path by which the science can be entered upon—that by which each learner repeats for himself the fundamental observations on which the science is based” in a laboratory where “each post for teaching is no less a post for learning.” In judging of an institution for medical education, therefore, the teaching staff of the departments and their capacities and facilities for learning, for active research work, must be taken into consideration.

If medical education has been slow to provide adequate training in the preclinical sciences on which the modern practice of medicine is more and more based, it is still more recently that the need for comparable facilities in the clinical departments has been realized, and efforts have been made to bring the educational standards of these departments up to those accepted for the preclinical subjects. It is useless and wasteful to give the student a sound training in the sciences and then to offer him a place in the practical work of a hospital unless the methods and knowledge gained in the study of the sciences are applied there also. The clinicians who guide him and direct his work must be capable of applying the methods of the sciences wherever possible in their hospital work, and must be adequately equipped with the necessary accommodation. Further, there is a big gap between facts and principles elucidated by work on laboratory animals, or on material derived from diseased persons, and the problems met with by the clinician in his endeavours to aid the individual human patient, and so there is need for much accurate work of observation, hypothesis and experiment, under the conditions of the ward and bedside. The principle that a teacher, to be fruitful and efficient, must always be himself learning, must always be investigating, applies just as much to the clinical subjects as to the pre-clinical; and so we find an increasing movement to apply the same standards of efficiency to the clinical departments in a medical school as are universally accepted as necessary for the preclinical—facilities for

practical work, guidance by teachers who are also investigators, and a minimal amount of lecturing and spoon-feeding.

To appreciate the stage of development that has been reached in medical education we can turn to the schools of this country for examples. Our medical schools are of two distinct types, distinctive because of their origins. The medical schools outside of London are schools of the universities. Education in the pre-clinical subjects is provided in university departments directed by professors who are selected from those eminent in the sciences concerned, no matter from what university they graduated, and staffed to a greater or less extent adequately by men who hope to find their career in these sciences. The principal limitation to the adequacy of these departments is a financial one, university education being always hampered in this respect. This is, to some extent at least, beneficial, for vigour seems to depend on the necessity for effort under adverse circumstances, if the circumstances are not too adverse. In each university one department or another stands out at different times as definitely more successful than the others—a success that depends on the individuals composing the staff, and most of all on the personality and capacity of the professor. On the whole the education provided in the pre-clinical departments of these university medical schools is satisfactory, but at present they are still suffering from the effects of the war. The classes are too big for the departmental staffs and for the laboratory accommodation, so that in the effort to bring the majority of the students to the level of instruction that will enable them to pass the professional examinations, there must be too much didactic teaching and too little opportunity for practical work and personal observation. On the clinical side the situation is not so satisfactory. The clinical instruction is carried on in the wards of a municipal or a voluntary hospital that is not part of the university, and which is governed by a board of directors who must put other considerations than educational in the forefront of their policies. Some are even antagonistic to the aims of the university. The university is limited in the selection of its teachers to the staff of the hospital, and the positions on the staff of the hospital are unavoidably limited to the medical men of the immediate locality. Much of the teaching is formal, and many of the teachers, excellent practical clinicians though they be, quite incapable of maintaining the educational standards that the student reached in his pre-clinical subjects. This system produces sound, practical medical men, but does little to aid the practice of medicine in its march to the goal of applied science. Of course, individual teachers appear from time to time who, wholeheartedly devoted to medical education and

the advancement of their subject, stimulate their school by their example, and there are students who, in spite of the defects of any system, acquire what is best out of their teachers and make their own opportunities.

The medical schools of London are not university medical schools except in name, but are hospital schools. The apprenticeship to a clinician developed into the clerkship or dressership, and around the work in the wards the educational system has developed. Lectures were given in first one and then in all the pre-clinical subjects, by members of the hospital staff interested in these sciences. The provision for practical work in these subjects, and the appointment of professors and lecturers whose careers lay in these subjects and not in clinical practice, are developments of very recent years. Some of the schools make no attempt to provide a training in all the pre-clinical sciences, and none can afford departments and staffs of full university standard in all of the subjects that the universities consider necessary. On the clinical side, however, the hospital schools of London provide a practical training that is second to none, even if we who are taking part in it now can find much that could be improved. The devotion of the hospital staff to their educational functions, and the appointment of the student to positions in the wards in which he is a part of the machinery for the care of patients, are two important factors in this system of training in the clinical subjects.

Before leaving the two types of school as they are seen in this country, it is of interest to note that the university type, as it has evolved in Germany, and to an even greater extent as I shall explain later in America, includes departments in the clinical subjects similar in staffing and equipment to the departments for the pre-clinical subjects, each with a university professor, numerous assistants and laboratory accommodation. At the other end of the scale there was until recently to be found in America a type of school that was a caricature of the hospital school. These schools were formed by the local practitioners of a town offering courses of lectures in the pre-clinical and clinical subjects without any accommodation for practical work, and demonstrations on cases in the local hospital without any facilities for the students to examine or study the cases for themselves. Fortunately these so-called proprietary schools have now ceased to exist, and the degree of the M.D. given by them after such a course of study is no longer obtainable.

F. R. FRASER.

(To be concluded.)

THE AURÆ OF EPILEPSY.

FOCAL epilepsy was, it is true, recognized and described by Bravais in 1827, but Hughlings Jackson was the first to associate it with focal disease of the brain. His observations threw the first light on the localization and organization of the cortical apparatus; and though he vainly tried to avoid it, his name has become associated with this form of epilepsy.

Hughlings Jackson, by careful observation and deduction, was able to show that a local fit progressed along physiological lines; further, he expounded that consideration of the aura gave a clue to the location of the unstable part of the brain responsible for the subsequent discharge of motor energy as evidenced by the convulsion. On account of this the various phenomena met with as auræ may be of value in the localization of cerebral dysfunction; but let it be understood that Jacksonian attacks are more frequently met with in so-called "idiopathic" epilepsy than in any other lesion of the central nervous system.

The auræ of epilepsy may be divided into five large groups: (1) Motor, (2) sensory, (3) visceral, (4) cephalic, (5) special sensory, (6) intellectual.

Motor.—The commencement of the attack may be by a motion in some part of one half of the body, most frequently in the arm, less frequently in the face or leg, occasionally in the tongue, and very rarely in the trunk. Commonly the first symptom is a spasm of a group of muscles subserving the same function; the spasm is then followed by a series of clonic movements varying in rapidity. The movements spread to other parts of the limb; and if they commence in the hand they ascend the arm, and may pass to the trunk or leg before consciousness is lost. The site of origin of such movements has been shown to be in the pre-central gyrus of the opposite cerebral hemisphere. Therefore the progression of symptoms is along the level of the motor cortex. For example, once the movement has spread from the hand to the shoulder, the trunk would next be involved; and again, owing to the approximation of the face motor area to that of the fingers, progression may pass direct from the hand to the face. It is rare to be able to watch this physiological progression, but one case comes to mind. A man while buttoning up his waistcoat with his left hand felt his hand go stiff; this was followed by twitching movements of the hand, which spread to the wrist, elbow, shoulder, left face and left leg. The movements lasted close on two minutes, during which period he was able to recount the feelings he experienced; unconsciousness did not supervene. At operation he was found to have a glioma

coming to the surface in the right Rolandic cortex at the level of the hand area.

These movements, though co-ordinated in a sense, are crude, and in no way resemble any of the elaborate movements used in everyday life. It is rare, however, for an attack to be preceded by some co-ordinated movement of great complexity. Boëtius has described a form of epilepsy in which the patient invariably starts running a few yards before he falls down in a fit, and to this form he has given the name "*epilepsia cursiva*." Gowers relates two cases—one patient who always turned round and retraced his steps before an attack, and the other who sprang up and jumped about the room for a few seconds before the convulsion element set in with unconsciousness. It is only too obvious that such highly co-ordinated movements must be dependent upon excitation or release of a level higher than the Rolandic area, and probably situated in front of the precentral gyrus.

Sensory.—As sensory auræ are entirely subjective and consequently lack the power to attract notice, they are apparently less common. It is now known not only from clinical observation, but also from experimental work, that the sensory cortex lies behind the fissure of Rolando. How far it extends towards the occipital pole is, as yet, not accurately defined; but there is little doubt that the anatomical arrangement of the sensory representation of the various parts of the body is analogous to that of the motor cortex, the lower limb being represented towards the apex of the hemisphere and the head in the region of the Sylvian fissure.

The sensations as described by the sufferer vary in character. It may be a "numbness," a "deadness" or a "loss of feelings"; in some a feeling of "pins and needles" is predominant. Rarely, if at all, does one come across sensations of heat or cold, for such sensations are represented at a lower level in the thalamus. As in the motor auræ, these sensations spread along definite physiological and anatomical lines; the "numbness" passes from the hand to the face, or it ascends the arms to the trunk and the leg. Frequently such sensations are unaccompanied by any loss of consciousness. But, as Holmes points out, the paræsthesiæ may be followed by an actual loss of sensation; he records the case in which, following the sensory aura, a complete loss to all forms of sensation was found in the segment involved. The point of interest lies in the absence of all forms of sensation, as destruction of the parietal cortex is not associated with loss of thermal perception. It is known, however, that following motor auræ a fleeting flaccid paralysis may result from the temporary exhaustion of the grey matter of the Rolandic cortex; it is possible, then, that the excitation of the parietal

cortex may be followed by a temporary exhaustion of the grey matter of that area and of the subcortical centres situated in the thalamus.

Most commonly sensory auræ commence in the upper or lower limb and spread to the trunk or face. Rarely does such an attack have as its starting-point the face. The explanation of this is still obscure; but it is possible that the cortical sensory areas are less definitely defined than the cortical motor areas, in favour of which is the view that the pre-Rolandic cortex may subserve the sensory function of recognition of the position of the limbs in space. Also Sittig has pointed out that the paræsthesiæ do not always spread from part to part, as is supposedly represented in the parietal cortex.

Visceral.—The most frequent aura described by sufferers from epilepsy is a sensation referred to the abdominal viscera. It is a sensation at the epigastrium, usually vague, but sometimes actually painful. If it is pain it may remain in the region of the epigastrium, but on occasion it may be referred to one or other iliac fossa. A young female adult complained of frequent paroxysmal pain in the right iliac fossa, for which she was operated upon as a supposed case of intermittent appendicitis; the appendix was found to be perfectly healthy. Eventually the paroxysms of pain were quickly followed by unconsciousness and a convulsion; in short, her pain was an epileptiform aura. But this is uncommon, and the usual sensations are described as vague feelings of "turning over" or "blowing out." Frequently such sensations referred to the abdomen are followed by other sensory phenomena; the sensation ascends through the chest to the throat or the head, and on reaching the throat there is a sensation of choking which may be identical with the globus hystericus. Occasionally the warning is only that of choking. Gowers has suggested that these auræ, ascending to or felt in the throat, may be the expression of a disturbance of the central processes connected with the respiratory function of the pneumogastric nerve. Cardiac sensations are comparatively rare; but sometimes palpitations or vague discomfort referred to the cardiac region constitute the aura.

These visceral sensations are at present of no value in localizing organic disturbance of the brain. But Hughlings Jackson pointed out that all parts of the body and components thereof are represented in the nervous system; and it is possible that in the future such visceral sensations will be found to arise from definite areas within the brain as yet unrecognized. Such speculation is not unfeasible, for recent research has shown that the brain-tissue around the third ventricle has control over certain excretory functions.

Cephalic.—Sensations referred to the head are common;

definite pain, usually indefinite in location, is rare; more frequent is a sense of "rushing of blood to the head" or a "vague heaviness," either being rapidly followed by a dimness or loss of sight. Rarely does giddiness or vertigo form a constituent part of an aura; but when it does it is associated with a rotation of the head and eyes to one side. In such instances the vertigo or giddiness is not a "true" aura, but the result of a movement probably initiated by excitation of one or other Rolandic cortex. These sensations are followed by a rapid loss of consciousness and prove of little or no localizing value, chiefly owing to the vagueness of their character.

Special sensory.—For convenience of description these may be subdivided into three groups—visual, gustatory and olfactory, and auditory.

Visual.—Gowers states that special sense auræ are very frequent and important; he adds that visual auræ are twice as frequent as all the other special sense auræ put together. The cortical visual centres lie in the region of the calcarine fissures, each hemisphere serving the opposite halves of the visual fields. This area of the cortex deals only with the crude sensations of vision, such as perception of light and colour. The more highly organized visual perceptions are dependent upon yet higher centres localized in front of the occipital cortex in the region of the isthmus of the temporal lobes. It is not uncommon to be told by an epileptic that immediately before losing consciousness he sees flashes of light. Careful interrogation will elicit the following facts: The flashes of light resemble stars or balls of light which are coloured blue, red or green; further, the flashes occur either to the right or left of central vision. Seldom do they appear in the area of central vision. Frequently the flashes of light occur in a hemianopic field of distribution, in which for the moment the subject is quite blind. The primary excitation in such cases is probably localized in the occipital lobe of the hemisphere opposite to the side on which the auræ are first perceived. The following case is an instance thereof: A middle-aged woman was admitted to hospital with obvious signs of increased intra-cranial pressure; she complained of coloured flashes of light lasting only a few seconds at a time in the left field of vision. At operation a large endothelioma was found growing from the falx cerebri into the right occipital lobe and practically obliterating the region of the calcarine fissure. More rarely is to be found the sudden loss of sight in one half of the field of vision; but following the aura of coloured lights, it is not uncommon to find a hemianopic loss of vision. This is explicable on the basis of temporary loss of function following upon excessive local excitation.

More complex visual auræ are comparatively uncommon. But the case of a man comes to memory to illustrate such visual phenomena. With symptoms of increased intra-cranial pressure this man had persistently been examined for localizing signs without reward. One day, from a position at the foot of his bed, it was noticed that he looked dazed, and that he turned his head in a series of jerky movements to the left. Asked why he did so he replied that he saw his sister at the foot of the bed, but that when he tried to look at her she moved to the left, and continued to move to the left whenever he attempted to fix her in his central vision. The actual image of his sister lasted only a few seconds and he was able immediately to describe his symptoms. A large cystic glioma was exposed in the region of the isthmus of the right temporal lobe. Analysing his symptoms, it is apparent that he saw in his left visual field a complex picture as distinguished from the crude sensations of light evidenced by coloured flashes. An image of such complexity must have originated from a higher level than the occipital cortex—namely, in the region where the glioma was found. It is uncommon to find such definite visual images; frequently indefinite shapes and objects arise from lesions in this locality. Such highly complex visual phenomena are rare in idiopathic epilepsy, but when they do occur they point to an aura of unstable cortex at the posterior end of one or other temporal lobe.

Gustatory and olfactory.—Such auræ are rare in epilepsy; their very rarity makes them of extreme interest. The olfactory sensations are usually unpleasant in character—an “indescribable” or “bad” smell, which lasts only a few seconds. Associated with this sensation are certain “reflex” movements of “scratching” or “rubbing the nose.” The gustatory sensations are of extreme rarity, and consist of a “sour,” “bitter” or “metallic” taste; flavours occasionally occur in association with gustatory sensations, but never in combination with olfactory sensations. This is of interest, as flavours are largely olfactory and not gustatory sensations.

Ferrier demonstrated experimentally that excitation of the uncinate gyrus in animals produced “reflex” movements. These movements were of chewing, of smacking the lips and sometimes of spitting, and suggested a primary gustatory or olfactory stimulus. Jackson records several cases of epilepsy in which such movements followed a crude sensation of taste or smell, and postulated that the focus of discharge was in the uncinate gyrus. It is now known that his hypothesis was correct, for lesions of the uncinate lobe are associated with olfactory phenomena. These frequently merge into

another form of auræ classified under “intellectual aura.”

Auditory.—An auditory warning is more common. There may be a sudden loss of hearing or some loud noise. Holmes refers to the case of a man whose attack was heralded by the ringing of a bell, the sound of which progressively increased in volume till unconsciousness set in; following these attacks there was no loss of hearing. Sounds are heard bilaterally, never in one ear. The representation of each ear in the cortex of both hemispheres would account for this, and for the absence of loss of hearing following the attack. In relation to this form of auræ are the cases of “reflex” epilepsy in which a sudden loud noise causes the patient to fall down unconscious; the mechanism of this “reflex” is closely associated with the connections of the auditory nuclei to those at the base of the brain.

Intellectual.—Hughlings Jackson directed special attention to a form of aura which he described as a “dreamy state” or an “intellectual aura”; he found that these states were frequently coupled with a crude sensation of smell or taste. Since then Kinnier Wilson has contributed a masterly work on the subject, in which he divides the “dreamy state” into four types; these are the “familiarity” type, the “unreality” type, the “panoramic” type, and the “abortive” type.

In the “familiarity” type the patient is conscious of passing through a series of incidents or circumstances which are quite familiar to him. He apparently recalls to consciousness some incident of which he feels quite cognizant though he cannot associate it with any preceding part of his life. Analysing such sensations it will at once appear that the reminiscence may be genuine; the patient may have actually had such a previous experience and lost it from conscious memory; or it may be the recalling of some incident through which he has not actually lived but of which he has read.

In the “unfamiliarity” type, the scenes, though real and life-like, are scenes unexperienced before. The reminiscence then must be illusory and not the result of the release of memories gained in consciousness. It is possible that they may be the recall of dream memories.

The “panoramic” type is closely associated to that of “familiarity,” but as a rule is much more vivid. It is said and recorded that in the death throes by drowning one sees the whole of one's earlier life pass in front of “one's eye.” This is the nature of the panoramic type. The patient will recall his childhood days, will see his nursery toys, even the pictures on the wall. In other words the memory of previous conscious states is brought vividly to the surface.

The “abortive” type is different. The patient will have difficulty in relating the incidents; he will express

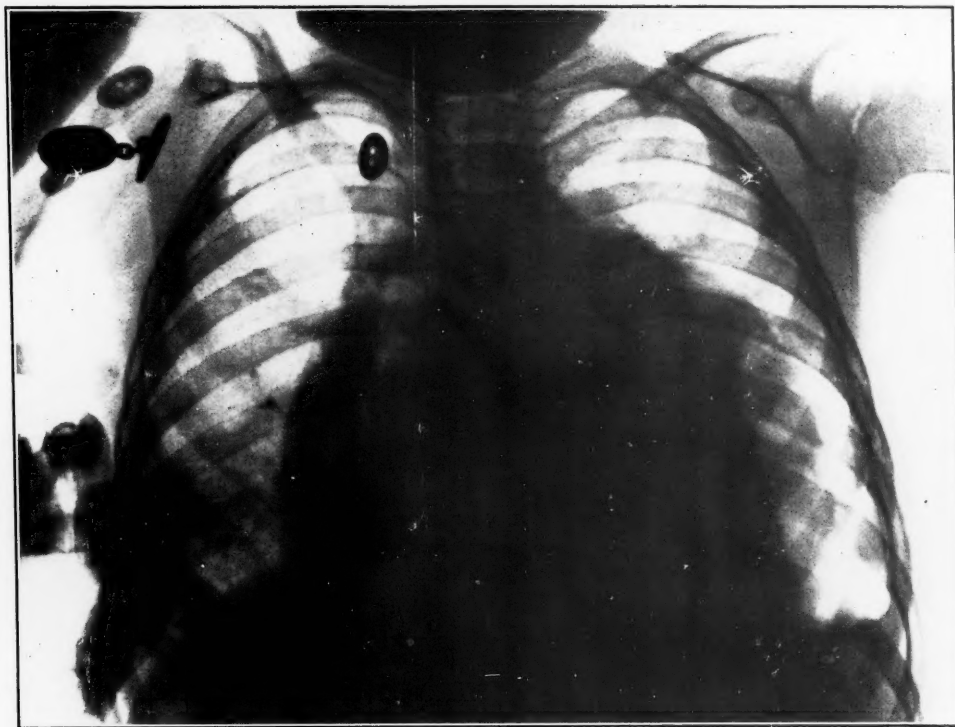


FIG. 1.

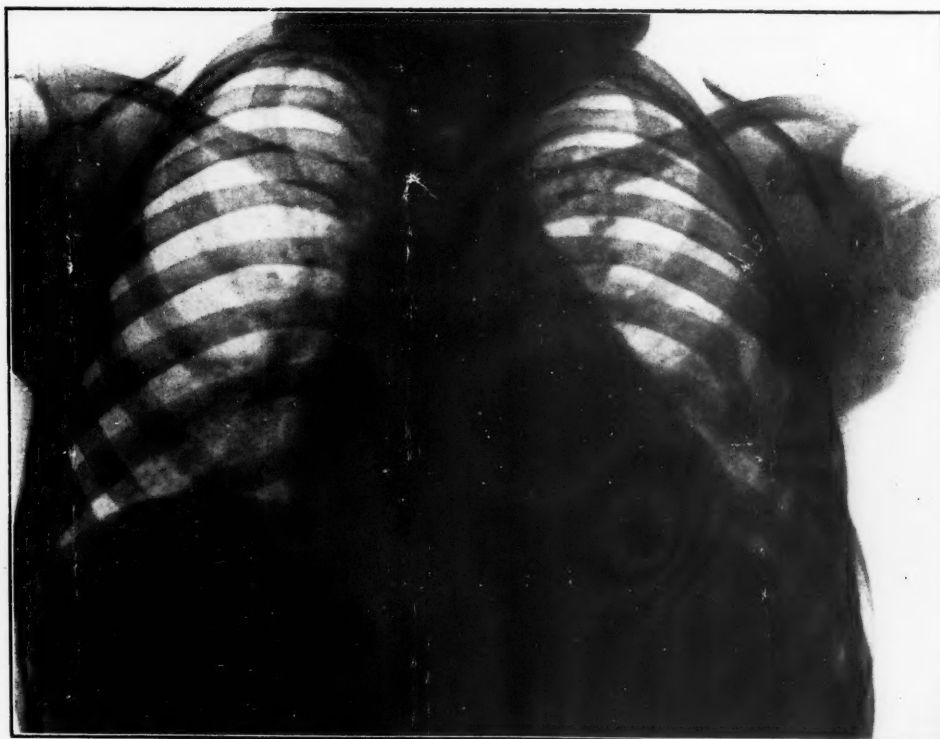


FIG. 2.

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BEATTIE: A CASE OF SUPPURATIVE PERICARDITIS.

an inability to explain and at the same time a desire to relate his experience, yet he regrets that he cannot. It almost appears as if he were on the verge of seeing something which his memory fails to recall or which is preceded by unconsciousness. The feeling is more that of "some impending incident."

The explanation of such *auræ* is difficult; but that it is based on physiological principles rather than on psychological is more likely, for they occur in lesions such as a tumour or, as in Hughlings Jackson's case, an abscess situated in the uncinate region of the temporal lobe. This localization explains their frequent association with crude sensations of smell and taste. Jackson took up the attitude that such complicated mental states could not result from direct excitation, thus differing from other *auræ*; he suggested that they resulted "from an increased energizing of centres permitted by removal of control of higher centres." In other words, he considered it to be a release phenomenon. Holmes, while not considering the mechanism involved, suggests that, as such phenomena are initiated in the rhinencephalon, phylogenetically one of the oldest portions of the cerebral cortex, the uncinate gyrus may function as a storehouse of memories. Wilson, however, draws attention to the close connection by means of large commissural tracts between the uncinate region and the higher visual cortex, and theorizes that the "stimulus" started in the uncinate region travels along such tracts to the visual centres.

Epilepsy is frequently looked upon as an uninteresting symptom-complex. But surely a study of the *auræ* experienced by patients is of extreme interest if they are considered from the point of view of the function of the various cortical areas and their inter-relationship. Further, many of the *auræ* bridge the gap between neurology and psychology, and bring psychology within the scope of an anatomical explanation; consequently, abnormal psychological events may be disturbances of normal physiological processes which are dependent upon definite anatomical centres and pathways.

In the preparation of this paper the works of Hughlings Jackson, Collier, Holmes and Wilson have been freely consulted and much appreciated.

E. A. C.

TO A YOUNG HARLEY STREET SURGEON (*who sent me his photograph as a Christmas card*).

Shall —'s face his fortune find?
Does his likeness speak?
Will it bring his skill to mind
Or just his cheek?

D. V. H.

A CASE OF SUPPURATIVE PERICARDITIS, WITH RECOVERY.

THIS case is an interesting one as it demonstrates the extraordinary resistance displayed by a child against an acute bone infection followed by many serious complications.

The patient, a girl, *æt.* 4 years 10 months, was admitted to the Hospital on October 7th, 1928, complaining of having been wakened 12 hours previously by sudden agonizing pain in the left thigh.

On admission the child was obviously acutely toxic, with continuous delirium, a hectic flush, intermittent generalized spasmodic movements, and temperature 104° F., pulse 130, respirations 28. The left knee was held flexed, and the child shrieked with pain when the lower third of the left thigh was touched; the latter area was swollen and the skin reddened just above the internal condyle of the femur, but no definite lump was palpable. There was no effusion into the knee-joint. Heart and lungs showed nothing abnormal.

A diagnosis of acute osteo-myelitis of the femur was made and an operation immediately performed. Under general anaesthesia an incision was made over the internal aspect of the lower third of the left femur. On exposing the periosteum the latter was found to be raised from the bone by a collection of thin blood-stained pus, which was evacuated, a gutter was made in the diaphysis close to the epiphyseal line, and drainage-tubes were inserted. Unfortunately the pus was not examined bacteriologically, but there can be little doubt that the infecting organism was a staphylococcal one.

For four days after operation the patient's condition improved, until suddenly the respirations rose to 80 per minute and signs of broncho-pneumonia developed (see Chart I). By the twelfth day of the illness the temperature had fallen by lysis to normal, but the pulse-rate still remained at 150-160, the respirations having dropped to 45. Meanwhile the local condition in the left thigh was clearing up well. The general condition then improved considerably until the twenty-first day of the illness was reached, when the temperature chart began to show a definite change, the temperature becoming intermittent (97.4°-102°), the pulse showing proportionate variations and the respirations varying from 50-60 per minute (see Chart II).

On examination of the chest the following signs were found: Impairment of movement and dullness on percussion in the upper part of the front of the chest on the left side from the second intercostal space. A.C.D. not otherwise increased to the left or right; no præcordial bulge. The temperature chart, by its character, suggested suppuration, and this was confirmed by a

leucocyte count of 23,800 per c.mm. The local condition was quite satisfactory, and did not appear to account for this temperature and leucocytosis. At this time (twenty-sixth day of illness) the temperature was 102° F., pulse 156, respirations 60. A.C.D., second rib to $\frac{3}{4}$ in. to right of sternum to 1 in. outside mid-clavicular line. Apex-beat was not palpable; there was no præcordial bulge. On auscultation no heart-sounds were audible and no præcordial friction was heard. Dr. Graham saw the patient and diagnosed pericardial effusion—probably purulent; this was confirmed by X-ray examination (see Fig. 1).

X-ray report.—The heart shadow is enormously enlarged in all directions, especially upwards, and has assumed the typically rounded appearance associated with pericardial effusion. There is also some thickening of the pleura at the base of the left lung.

Operation.—(November 2nd—twenty-seventh day of illness). G. and O₂ anæsthesia. Without previous aspiration, a vertical incision was made below the costal margin, $\frac{3}{4}$ in. to the left of the mid-line separating the fibres of the left rectus muscle. The peritoneum was drawn downwards, the tissues between the sternal and costal origins of the diaphragm separated and the bulging pericardium incised. Immediately, about 12–14 oz. of slightly turbid fluid gushed out with considerable force. Digital examination of the pericardium was then carried out. The heart was felt beating strongly, and there were no pericardial adhesions found. As the fluid evacuated was only slightly turbid, it was not thought justifiable, owing to the risk of secondary infection, to drain the pericardium until the fluid had been examined for bacteria; the wound was accordingly closed.

Bacteriological report on fluid.—A slightly turbid fluid. Gram-stained films showed large numbers of polymorph leucocytes, but no organisms. Cultures on blood legumen agar—a fair growth of *Staphylococcus pyogenes aureus*. On the strength of these findings it was decided to drain the pericardium.

Second operation.—(November 3rd.) Ethyl chloride anæsthesia. The wound was rapidly re-opened, 2 oz. of fluid evacuated from the pericardium, and a drainage-tube inserted just into the pericardium through the original incision.

After this the wound drained freely and within twenty-four hours the discharge was frank pus.

The patient's general condition gradually improved and the temperature fell to normal four days later, the A.C.D. diminishing rapidly.

November 6th (thirty-first day of illness): Red blood-cells, 4,860,000; white blood-cells, 15,400; hæmoglobin, 77%; colour index, 0.8. About this time, in

the left axilla, an area of impaired percussion note appeared, with physical signs suggestive of a localized collection of fluid (see Chart III). This area, therefore, was aspirated in the eighth space in the post-axillary line and 3–4 c.c. of thick pus were withdrawn. (Cultures of the pus produced a pure growth of *Staphylococcus pyogenes aureus*).

In view of these findings, on November 8th $1\frac{1}{2}$ in. of the eighth rib in the post-axillary line was resected under local anæsthesia, but no pus was found in the pleural cavity. The visceral layer of the pleura, however, was thickened and adherent to the parietal layer. A needle introduced for $1\frac{1}{2}$ in. into the lung substance gave a negative result. A drainage-tube was inserted and the wound closed around it. After this operation the temperature gradually settled with occasional rises to 100° F., and the patient's general condition improved until November 20th (forty-fifth day of illness), when signs of heart failure became obvious—œdema of the legs, back and abdominal wall, etc., with the presence of ascites.

On November 28th the pericardium was re-explored through the old incision, but no effusion was found. At the same time aspiration of the peritoneum was performed and straw-coloured ascitic fluid was withdrawn. The second left intercostal space was also investigated (the possibility of empyema arising owing to the persistent dullness in this region), but no pus was found.

On November 30th paracentesis abdominis was carried out and 36 oz. of ascitic fluid removed. Following this the œdema rapidly disappeared and the general condition improved steadily, the temperature remaining about normal, pulse falling to 120, and the respirations to 30 (see Chart IV). The patient was up for the first time on January 1st, 1929 (eighty-seventh day of illness), and was discharged to a convalescent home on January 15th.

Clinical examination before discharge was as follows: A.B. fifth space in mid-clavicular line, unaltered by change in posture. A.C.D., third rib to right border of sternum to A.B. Heart-sounds were natural. The pleural, pericardial and thigh wounds were healed and there was no ascites.

An X-ray examination of the chest (see Fig. 2) was reported on as follows: A portion of the eighth left rib has been removed and has been re-formed. The heart shadow is still enlarged; the enlargement extends right up to the aorta; it has not, however, the typical globular appearance of a pericardial effusion, but is now pear-shaped. The width of the aorta suggests pericardial thickening or a little effusion.

I am indebted to Mr. Geoffrey Keynes for permission to publish this case.

W. J. H. M. BEATTIE.

ACUTE THYMIC ASTHMA.

T may be of interest to record these three cases, as they all presented the same clinical picture.

CASE 1.—A boy, æt. 3, was quite well until 5 p.m. on November 14th, 1928, when it was noticed he was "off his feeds," became feverish and sweated.

At 5 p.m. on the next day the child had "a fit" and was brought to hospital in a "fit," and on account of its serious condition it was admitted at once.

On examination the child was found to be cyanosed, with marked spasm of the small muscles of the face and twitchings of both arms and lower limbs. There was inspiratory dyspnœa and the *alæ nasi* were working.

Temperature, 101° F.; pulse, 120; respirations, 35.

There was no head-retraction, no Kernig's sign, no faucial obstruction, no aural or nasal discharge.

The tongue was natural and the tonsils were also natural.

There was marked inspiratory recession in the lower chest and extensive capillary bronchitis, with no localized patches of dullness or bronchial breathing.

The liver was one and a half finger-breadths below the costal margin, and the spleen was just palpable.

The limbs were natural. No lymphatic nodes were palpable and no rash was seen.

The child was at once given a mustard-bath and this, for a time, controlled the spasm and the dyspnœa was relieved somewhat. Later continuous oxygen was given through a nasal tube, and the thick mucoid substance which collected in the mouth and pharynx was continually swabbed out. Atropine (gr. $\frac{1}{100}$) was given subcutaneously at this stage. Following this the spasm and twitchings disappeared and the chest signs cleared somewhat. The colour improved and the respiratory distress was not so great. During this stage potassium bromide was given *per rectum*.

However, about 9 p.m. the child became suddenly worse, the cyanosis deepening, and the child died at 9.30 p.m.

CASE 2.—November 16th, 1928, at 7 p.m. a boy, æt. 2½, was admitted to Hospital with a fit, with the history that it was quite well until 4 p.m. that day. While having its tea it suddenly went into a "fit."

On examination it was found to have the same physical signs as in Case 1. There was intense cyanosis, spasm of muscles and extensive capillary bronchitis.

The diagnosis in both cases at the time of death was that of an acute broncho-pneumonia.

Post-mortem findings were the same in each case.

There was a large thymus, 5 in. by 4 in. by ½ in., spreading up into the neck and lying over the trachea, causing pressure on the latter.

Macroscopically the thymus was firm, with marked small hæmorrhages.

Microscopically the specimen showed ordinary thymic tissue.

The lungs showed extensive bronchitis, but there was no localized area of consolidation. No other congenital abnormalities were observed.

CASE 3.—Girl, æt. 4, was quite well until 4.30 p.m. on January 14th, 1929, when she was seen to fall on her left side in a fit. The parents stated that her left hand was weak. Shortly afterwards the child had several more fits and was brought up to Hospital and at once admitted. The child was found to have urgent dyspnœa and acute capillary bronchitis. Atropine $\frac{1}{100}$ gr. and Curschman's solution \mathfrak{m} iij were given, the dyspnœa being relieved and the signs in the chest cleared. An hour later the child had another fit, the dyspnœa and extensive bronchitic signs reappearing. The child died a few moments later.

In view of the previous two cases and the post-mortem findings in them, a tentative diagnosis of acute thymic asthma was made.

At post-mortem the thymus was enlarged (weight 20 grm.) and was compressing the trachea antero-posteriorly near its bifurcation to such an extent as barely to permit the entrance of the small scissor end. There was also diffuse lymphoid hyperplasia.

The interest in these cases lies in the definite clinical picture of a sudden onset with a fit followed by further fits and urgent dyspnœa with the signs of capillary bronchitis in association with enlargement of the thymus gland.

We are indebted to Dr. Morley Fletcher and Sir Percival Horton-Smith Hartley for permission to publish these cases.

H. O. WHITE.

A. CLARK.

DR. WILLIAM BEAUMONT AND HIS
"PATENT DIGESTER."

SIR WILLIAM OSLER, in his Harveian Oration of 1906, maintained that we should endeavour to judge the great scientific discoveries of the past in the light of contemporary knowledge. The work of Dr. Beaumont on the physiology and pathology of the human stomach affords a good instance of this point. It is true that Dr. Beaumont's observations did not lead to any revolutionary discoveries, but he settled finally many of the controversial speculations upon digestion which were absorbing the energies of the physiologists a century ago, and founded the basis of our modern knowledge of functional gastric disorder.

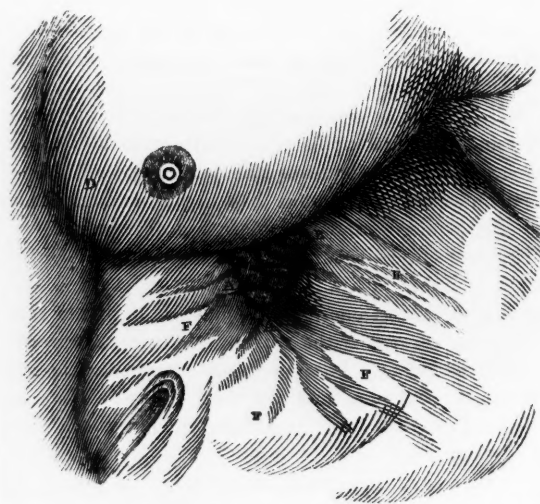
Moreover, much of the knowledge which has come to light since his day was in some measure anticipated by observations which he recorded carefully, but which he, in his capacity as a general practitioner, was unable to follow up and elucidate.

In 1822 Dr. Beaumont was surgeon to the American garrison stationed at Fort Mackinac, a trading post established on an island at the junction of the two great lakes, Lake Michigan and Lake Huron. From the fort the American Army policed the frontier and kept in check the Iroquois and the Hurons whenever they went on the war-path; to it came the "voyageurs" and hunters of the American Fur Company to sell their pelts and replenish their stores. On the morning of June 6th the trading store was thronged with hunters, when one of them accidentally let off his shotgun, and severely wounded a young French-Canadian, Alexis St. Martin, who received the whole charge of duckshot and wadding in his left side at so close a range that his clothing caught fire. Dr. Beaumont was sent for and arrived on the scene within three minutes. He found that a large mass of tissue had been blown away, "about the size of a man's hand . . . fracturing and carrying away the anterior half of the sixth rib, fracturing the fifth, lacerating the lower portion of the left lobe of the lungs, the diaphragm, and perforating the stomach." He resected the fractured fifth rib, dressed the wound with a "carbonated fermenting poultice" and left his patient in charge of Mr. Hubbard, the storekeeper, certain that he could not live through the night.

To his astonishment his patient lived, and in the course of the next month large masses of tissue sloughed away, including portions of the stomach and lung and the remainder of the fifth rib. An empyema formed, drained for three months, and was finally healed by union of the stomach-wall to the parietal pleura. St. Martin refused to have the opening into his stomach closed by operation, and its contents had to be retained by firm dressings. Towards the end of the year the lower costal cartilages on the left side and the ensiform cartilage were removed by operation, an abscess having formed at the lower end of the sternum. From this time the patient recovered so rapidly that the question arose of sending him to his home in Canada, 1500 miles away; but Dr. Beaumont considered the journey by canoe and pack-horse too arduous and took him into his own employment. In 1824, two years after the accident, the gastric mucous membrane at the upper border of the fistula prolapsed and formed a valve, closing the aperture from within so well that dressings were no longer needed. This woodcut, made by Mr. King for the first edition of Dr. Beaumont's book, shows the condition of the wound at this time.

In May, 1825, Dr. Beaumont contracted with his patient to allow him to carry out a series of experiments in the stomach at a salary of \$150 a year. These experiments were continued with various interruptions until November, 1833, and are recorded fully in the *Experiments and Observations on the Gastric Juice*, published first in America in 1833, and later in the English edition at Edinburgh in 1838, which edition forms the basis of this article.

Dr. Beaumont's first experiments were concerned with the relative time taken by the gastric juice to digest various "materia alimentaria," as he somewhat pedantically called the 104 kinds of foodstuff served up to the hapless Alexis, tied in a muslin bag at the end of a



F IS THE PUCKERED SCAR OF THE ORIGINAL WOUND; E IS THE OPERATION SCAR MADE WHEN THE ABSCESS WAS OPENED AND THE COSTAL CARTILAGES WERE REMOVED; B INDICATES THE BASE OF THE VALVULAR FLAP OF MUCOUS MEMBRANE.

piece of string. The table of digestion which resulted from these experiments makes amusing reading, but is not of much practical value. More interesting are the facts recorded in this table that exercise sometimes reduced the time taken in digestion by as much as one hour; and that on several occasions, when Alexis, not unnaturally perhaps, became impatient with the investigator, the digestion of "recently salted pork" and "rare roasted beef" was considerably delayed.

A concurrent series of experiments on the action of gastric juice *in vitro* led him very near to the discovery of enzymes. He found that in the cold the juice had practically no action; that on a water-bath at body temperature digestion did occur comparable to that in Alexis' stomach, although it took rather longer to

complete, and further that this digestive action still followed after the juice had been kept in the cold for twenty-four hours. He also found that a dilute solution of hydrochloric acid of about equivalent strength to the acid in normal gastric juice had no such digestive action, compared with a control phial using pure gastric juice. This description to a modern mind obviously suggests enzyme action, but a century ago it was only possible to account for it in terms of pure chemical action. Such an explanation was beyond the powers of Dr. Beaumont, and there the question rested till the discovery of pepsin by Schwann in 1836. Nevertheless, this work finally ended a school of teaching existing at the time, which claimed that gastric juice was inert—an opinion stoutly upheld by a certain Montègre, who had developed the unpleasant accomplishment of vomiting at will, and from an analysis of the fluid so obtained concluded that what had previously been called gastric juice was merely swallowed saliva, and "possessed no peculiar powers of acting on alimentary matter." Montègre and his followers also denied the acidity of the gastric secretion. To settle this point Dr. Beaumont sent specimens of gastric juice for analysis to Prof. Dunglison, of the University of Virginia, and Prof. Silliman, of Yale, both of whom sent reports which agreed as to the main essentials, namely, that it contained free muriatic and acetic acids, together with phosphates and chlorides, salts of potash, soda, magnesia and lime, and "an animal matter soluble in cold water, but insoluble in hot"—presumably albumen. Prof. Silliman added that the specific gravity was 1005, and the reaction decidedly acid.

Dr. Beaumont also tested the action of saliva, and found that it had no digestive action upon beef or mutton, but noticeably assisted mastication. It is unfortunate that he did not try its action on starchy foods, for it was not until 1845 that ptyalin was isolated. With bile he was more fortunate. Von Haller in 1736 had noted that the principal action of bile was in the digestion of fats. Dr. Beaumont goes one step further in the following experiment: One drachm of olive oil was mixed with three drachms of gastric juice, but no digestion occurred after ten hours at body temperature. He therefore separated the mixture into two equal parts, and to the one part added two more drachms of pure gastric juice, to the other part two drachms of a mixture of gastric juice and bile. After a while he found that in the second part "the bile seemed principally to unite with the oil, breaking it down and reducing it to almost imperceptible globules," but did not actually digest it; whereas in the control phial there was no such change.

Following the teaching of Magendie, it was almost universally accepted at that time that gastric secretion

was continuous; some even taught that hunger was caused by accumulated unused gastric juice. Dr. Beaumont, on the other hand, proved, by looking into St. Martin's fistula before breakfast, that in the resting stomach only sufficient was secreted to lubricate the walls. In one experiment, well worth quoting in full, he anticipated Pavlov: "Jan. 19th. At 9 o'clock a.m. coats of stomach perfectly clean and healthy. There was no free fluid in the gastric cavity until after the elastic tube was introduced, when it began slowly to distil from the end of the tube drop by drop, perfectly transparent and distinctly acid. I gave him a mouthful of bread to eat. No sooner had he swallowed it than the fluid commenced flowing more freely from the tube." He correctly concluded that the sense of taste stimulated the flow of secretion.

His accurate observations on the movements of the stomach, which were not equalled until the work of Cannon with X-rays, arose incidentally when for nearly ten months he regularly set out to record with a thermometer the variations of gastric temperature, hoping to find some connection with the weather, which he also carefully recorded. But while St. Martin's stomach resolutely clung to a temperature of about 100° F., it resented the presence of the thermometer and attempted to expel it through the pylorus, by waves of contraction passing downwards, lasting about half a minute and separated by periods of complete relaxation. So interested did the doctor become in these movements that on more than one occasion he gave up the whole morning to his observation, presumably to the detriment of his practice.

"That old fistulous Alexis" was by no means an ideal subject. On one occasion he interrupted the experiments by breaking his contract and running away. He was absent for four years, during which he married, became the father of two children, and was employed as a voyageur by the Hudson Bay Company. He also became inordinately fond of the pleasures of the table, and if his defections in this way irritated the doctor by spoiling his experiments, they allowed him to observe the effects of gastritis more accurately perhaps than has ever been done before or since. For instance, after a surfeit of oysters the "villous membrane of the stomach very much resembled the appearance of the tongue . . . furred with a thin yellowish coat, and inclined to dryness, with small aphthous patches in several places." Excess of mucus and less gastric juice was secreted. The cure for this condition was 6 gr. of blue pill, 6 gr. of calomel and four "aloetic pills," which, if it seems an heroic dose to those accustomed to "House physic," was nothing to Dr. Beaumont. He believed in "thorough catharsis," and on a similar

occasion gave St. Martin 30 gr. of calomel "*per fistulam*," removing all symptoms within three hours.

The picture of alcoholic gastritis affords a bigger warning to us. After "drinking ardent spirits for eight or ten days" his stomach became "unusually morbid, the erythematous patches more extensive, and spots more livid than usual, from the surface of which exuded small drops of grumous blood, the aphthous patches larger and more numerous, the mucous covering thicker than common, and the gastric secretions much more vitiated. The gastric fluids extracted this morning were mixed with a large proportion of thick ropy mucus, and considerable muco-purulent matter, slightly tinged with blood, resembling the discharge from the bowels in some cases of chronic dysentery." This account is so masterly that comment is superfluous.

The experiments came to an end in November, 1833, and St. Martin enlisted in the American Army. Many attempts were made to get him back for more experiments, and the Medical Society of London raised £300 for the purpose; but he had had enough. Right up to the time of his death, Dr. Beaumont corresponded with the Fur Company in the hope of regaining his "patent digester," as Alexis had been nicknamed; but even he failed. In spite of an increasing fondness for ardent spirits St. Martin lived to the age of 83, and when he died Sir William Osler made a determined attempt to obtain a post-mortem examination, hoping to preserve the famous stomach; but the relatives kept the body until it became so decomposed that the Curé refused its admission to church for the funeral. They then buried it eight feet deep to prevent exhumation.

Dr. Beaumont later became Professor of Surgery in the University of St. Louis, leaving the army in 1840. He bought a house in the heart of the country, now absorbed into the city of St. Louis, where he became deaf, so that when his daughter played the piano he used to listen by the hour by fixing his teeth firmly on the casing of the instrument. He died there in 1853, at the age of 68, a much respected citizen. As Dr. Myer has justly written, "All mankind has profited by virtue of his having lived."

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MYER, JESSE S.—*Life and Letters of Dr. William Beaumont*, 1912.

OSLER, SIR WILLIAM.—*The Alabama Student*, Oxford, 1908.

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STUDENTS' UNION.

UNITED HOSPITALS HARE AND HOUNDS.

The Forty-third Inter-Hospital Race for the Kent-Hughes Cup was run at Hayes, Kent, on Wednesday, March 6th, over the 7½ miles course. St. Thomas's won; London were second, with 1 point behind.

W. J. Walter (St. Bartholomew's) ran a splendid race, to win fairly comfortably in a fast time—45 min. 27 sec. Our next two home were H. B. Lee, ninth, and C. E. D. Goodhart, twelfth.

J. R. Strong and J. Galwey were unfortunately prevented from running by ankle trouble.

The first ten were:

W. J. Walter	Bart.'s	45 min. 27 sec.
J. S. Horsley	London	46 " 2 "
J. F. F. Evans	"	46 " 2 "
J. G. Billington	St. Thomas's	46 " 32 "
R. H. B. Snow	"	46 " 37 "
P. A. Forsythe	"	46 " 59 "
R. G. Macbeth	King's	47 " 40 "
E. J. Somerset	"	47 " 52 "
H. B. Lee	Bart.'s	48 " 9 "
G. W. May	London	49 " 2 "
S. T. Fall	"	49 " 2 "

The team scores were: St. Thomas's, 40; London, 41; Bart.'s, 63; King's, 66.

CORRESPONDENCE.

J. F. BULLAR.

To the Editor, 'St. Bartholomew's Hospital Journal.'

SIR,—May I be allowed to add a few reminiscences of our contemporary the late J. F. Bullar to Sir D'Arcy Power's obituary notice of him in the March number of your JOURNAL. I was one of Dr. Andrew's clinical clerks when Bullar was his house physician, and have a vivid remembrance of the incident of the cobbler, who, unless I am confusing him with another inhabitant of Little Britain, was a victim of severe tophaceous gout; and one point which impressed us strongly was the sympathy and assiduous personal care bestowed upon him by his whilom enemy during his stay in Mark Ward as the subject of an acute and fatal abdominal illness. Such kindness was characteristic of him who gave it.

Some of Bullar's pithy sayings stuck in our memories. Thus, when a clinical clerk asked him, "What is a fomes?" (I am afraid the word used was "fomite") the answer came, without hesitation, "Anything that conveys infection, from a postage stamp to a four-wheeled cab."

He kept a hedgehog, as a pet, in the residents' quarters, and reputedly had it that it lived in his bath. This involved cockroach hunts at night, and the Dispensary was a rich covert. It was said that there occurred in the book which had to be signed by residents visiting the Dispensary at night such entries as the following: Name of patient—Timothy Hedgehog; Disease—starvation; drug required—*Blatta domestica*. If they are not to be found in the volume referred to they were very well might be.

I am, Sir,

Yours, etc.,

ARCHIBALD E. GARROD.

Melton,
Suffolk.

To the Editor, 'St. Bartholomew's Hospital Journal.'

DEAR SIR,—In Sir D'Arcy Power's notice on Dr. J. F. Bullar he omits to say that after acting as Ophthalmic House-Surgeon he was Demonstrator of Anatomy for a time. When I was in "The Rooms" I started the collection of photographs of past demonstrators, getting them, as far as possible, autographed. Bullar sent his with a covering letter, but did not autograph it, and so I forged his signature on to the photograph, as will be seen in the Demonstrator's room.

Yours very truly,

R. FOSTER MOORE.

REVIEWS.

THE PRINCIPLES OF CLINICAL PATHOLOGY IN GENERAL PRACTICE.
By GEOFFREY BOURNE, M.D., M.R.C.P., and KENNETH STONE,
M.D., M.R.C.P. (Humphrey Milford, Oxford University Press,
1929.) Pp. xi + 392. Illustrated. Price 16s.

Rather more than a generation has elapsed since the study of clinical pathology started at St. Bartholomew's Hospital. For it is thirty-six years since the late Prof. Kanthack came here from Cambridge as Lecturer on Pathology and Pathologist to the Hospital. It proved the beginning of a new era. Looking back, it is extraordinary to recall what he was able to achieve with the very inadequate means at his disposal. All the work, whether teaching, routine investigation or research, was carried out in one room. Indeed, it was not until 1909 that the present Pathological Block was opened. Even this has now overflowed into the older School buildings, and in the process has swamped its original habitat.

It is fitting that this second generation should find expression in a new text-book of clinical pathology. When they arrived on the scene the subject had already established itself as an essential part of the equipment of a medical man. Their predecessors were handicapped by inadequate opportunities, and even by the scepticism of some of their teachers as to the value of laboratory methods in the diagnosis of disease. To-day the difficulty is quite otherwise. The mass of facts is so great that it is impossible for anyone to have first-hand experience of many of the methods on which he has to rely in part in coming to an opinion on a case. But as the authors of this book very justly observe, "No medical man should ask for a special investigation without knowing to what extent a positive, negative or an equivocal answer will react upon his clinical conception of the case."

We should, therefore, be prepared to welcome any book which has as its object the provision of such data as will assist the clinician to possess this knowledge. But in the present instance we can go much further than merely to welcome; we can cordially admire and recommend. The authors in their preface express their hope that they have held a balance between a text-book of clinical pathology and a text-book of medicine. Their aim has been to interpret the value of the pathological findings to the clinician, and in our opinion they have succeeded. Everyone, said Sir William Osler, drags after him some of the errors in which he was originally trained. Anyone whose training dates from the days when almost its only pathological basis was morbid anatomy must realize how his views are inevitably coloured thereby. Biopsy has extended and corrected necropsy. Pathological investigations are now no longer made when they are too late to help the individual patient, and merely with a view to guiding the physician should he be presented with a like problem again. The late Sir James Goodhart must have been in a mood that was unusually pessimistic for him when in 1912 he chose as the title for an address "The Passing of Morbid Anatomy." But perhaps it would be fairer to say that he showed therein that forwardly directed view which always characterized that admirable physician. Morbid anatomy deals with end-results. It is a valuable corrective against the building-up of airy hypotheses; its importance remains; it will never pass completely away, but it is not enough in itself as the basis of our pathological conceptions.

Here is the newer point of view well and concisely stated, for in less than four hundred pages we have a review of the principles of clinical pathology in practice, each section full enough to be interesting, and not a mere summary, while brief enough for the medical man to assimilate whose interests are not primarily pathological. The subject-matter is grouped under the headings of specific infections, diseases of the blood, of the cardio-vascular system, of the gastro-intestinal tract, of the respiratory and of the uro-genital system, metabolic and allergic diseases, with a useful appendix on the collection of pathological material. Naturally there cannot be, in the present state of our knowledge, universal agreement on all the topics treated of. We doubt, for instance, whether the general opinion of vaccines in pneumonia is so favourable as that which we gather the authors have formed. While deprecating the wide extension which has been given to the term "nephrosis," we must admit that the account given of it in this book is the clearest and most reasonable we have read. Altogether we consider the work has a wide field of usefulness before it; it is practical and lucid, without being unduly dogmatic. It reflects credit on the school from which it comes, and we cordially congratulate the authors upon it.

PRACTICAL CHIROPODY. By E. G. V. RUNITING, F.I.S.Ch. (London: Faber & Gwyer.) Pp. 196. Price 5s. net.

This is a most interesting and instructive little book. It deals with lesions of the feet, which, although termed "minor," are so very common, and are responsible for so much disability and loss of time in many occupations.

Text-books on medicine hurriedly pass over these minor foot affections, but medical men are often consulted on them. Sound advice combined with many personal touches will be found in this book. The author's forty years' experience introduces a wealth of detail in treatment, an especially useful chapter in this respect being the one on "pads and plasters."

The book also enters into the causation and pathology of the various lesions, and an attempt is made to base the treatment on strictly scientific lines.

RADIUM TREATMENT OF CANCER. By STANFORD CADE. (London: J. & A. Churchill, 1929.) Pp. 158. Illustrated. Price 15s. net.

This book gives quite a good survey of the present forms of radium treatment. Although it is especially good in those sections in which the author has extensive practical experience, it is less complete in others. The descriptions of the technique in all the sections, except those dealing with the tongue, mouth and neck, are too incomplete to be a real guide to a surgeon who is not familiar with it.

The book emphasizes the great possibilities of radium therapy, and presumably to support this contention includes a large number of case-records and coloured plates of treated cases. These are really more suitable for separate publication, and the space they occupy might well have been filled with technical matter and illustrative line drawings or diagrams.

While we can strongly recommend the book as by far the best published up to date, we feel that it leaves ample scope for another publication giving a better description of the effects of radium on tissues and more details of technique.

THE SCIENCE AND PRACTICE OF SURGERY. By W. H. C. ROMANIS, M.Ch., F.R.C.S., and PHILIP H. MITCHNER, M.S., F.R.C.S. Second edition. (London: J. & A. Churchill, 1929.) Two volumes. Pp. ix + 759; 937, 71. 674 illustrations. Price 14s. net each volume.

"The smaller the text-book the greater the lie" is an aphorism well enough appreciated by examiners and teachers of medicine. In this two-volume "Surgery" from St. Thomas's Hospital the authors have struck a balance of convenient mendacity, the usefulness of which may be judged from the fact that a new edition is called for after so short a time.

A conventional presentation of the subject is adopted; the matter is clear, concise and readable, and gives a definite picture of the conditions to be treated, their aetiology, their pathology, and the broad lines of treatment. Not least among the merits of the book are clear type and illustrations, which do in fact illustrate the text. The changes in this edition are chiefly additions to available methods of treatment— injection in varicose veins, bile in peritonitis, radium in malignant disease. The reader is referred to the full reviews of the first edition in the JOURNAL, 1927 (vol. xxxiv, pp. 158 and 174).

A suggestion for future editions is the deletion of the textual cross-references, which, although doubtless prompted by years of teaching acquaintance with the "medical student," seem unnecessary in view of the full index printed in each volume, and only annoy the reasonable individual.

LONDON HOSPITAL LECTURES ON FORENSIC MEDICINE AND TOXICOLOGY. By the late F. J. SMITH. Third edition. Revised by GEORGE JONES, M.B., D.P.H. (London: H. K. Lewis & Co., 1929.) Pp. xix + 440. Price 10s. net.

The subject of this book is not one of the most popular with medical students. Time given to its assimilation is often time begrudged. Yet the examiners require a nodding acquaintance with its bolder details, and here is the barest minimum, taking a mere two hours to read—but written with what a human touch! This book may well form a pleasant introduction to those unpleasant experiences which all young doctors expect at the hands of their wary legal colleagues.

The late Dr. F. J. Smith must have been a delight to hear, and students of other hospitals than the London should be grateful to the editor, who, in bringing the book up to date, has preserved its value for another generation.

A CHALLENGE TO NEURASTHENIA. By D. M. ARMITAGE. (Williams & Norgate, Ltd., 1929.) Pp. 52. Price 2s. 6d. bound; 1s. paper back.

This booklet contains an account of the methods the late Dr. L. S. Barnes used to treat patients suffering from neurasthenia, described by one of his patients. The neurasthenic was reasoned with, and shown, by reasoned, logical explanation, in which the resources of scientific knowledge were drawn upon, that his symptoms were impossibilities—inventions of his diseased subconscious. The subconscious put distorted "pictures" into the place of "facts." The weapons of the subconscious, fear and bluff, were countered with arguments, until the patient had no rational basis at all for his beliefs. The method appears to have done very well in Dr. Barnes's hands, and a perusal of this booklet may give other practitioners a basis upon which to found their own systems.

Two criticisms must be mentioned. It is conceivable that this setting of the patient to fight and eradicate his own diseased subconscious might lead to a conception on the part of the patient (particularly if he was slightly psychasthenic) of possession by an evil thing. The results of such a belief would be difficult to tackle. Again, there is no final court of appeal to establish the truth and a physiological refutation of the possible real existence of a patient's organically baseless symptoms and fears. Interesting and sincere as this small thesis is, it is more a tribute to the personality of Dr. Barnes than to the universality of his theory of neurasthenia.

AN INDEX OF SYMPTOMATOLOGY. Edited by H. LETHEBY TIDY, M.A., M.D., in conjunction with twenty-five Special Contributors. (Bristol: Wright. London: Simpkin Marshall & Co.) With 130 illustrations (some coloured). Pp. xii + 710. Price 42s. net.

The title, *An Index of Symptomatology*, implies a massive tome, which shall contain an account of the symptoms of all the troubles of the flesh, both medical and surgical.

The reputation of the editor, Dr. Letheby Tidy, which is largely based on his famous *Synopsis*, implies a "*multum in parvo*." Combine the two implications, and you have the book under consideration, but although the "*multum*" holds, the "*parvo*" is none too small.

There is much of the "Rook—see Rook," "Crow—see Rook" about this work, as there must be in any complete index; but when once the desired article is found it is read with appreciation. Typically it is concise and useful, and fairly comprehensive.

The range of articles is wide, but they cover it. One would not expect otherwise in view of the writers.

There are many good and useful illustrations, but they are not so successful as the letterpress. The skiagrams are small; the dermatological photographs are large and frequent, and rather monotonous.

But of the substance of the book there is nothing but good to be said. It provides a quickly accessible store of elementary and general information, which any student or house physician or surgeon may turn to when he is in a hurry or in doubt. He will find his subject easily, and read and digest it more easily still.

The value of the book lies, not in its advanced opinions, but in its general completeness.

CHANGES OF ADDRESS.

- BARON, C. F. J., 143, Blackstock Road, Finsbury Park, N. 4. (Tel. North 0621.)
 BOUCAUD, J. E. A., 1, Queen's Park East, Port of Spain, Trinidad, British West Indies.
 BURKE, Lt.-Col. G. T., I.M.S., King George's Medical College, Lucknow, United Provinces, India.
 CHILTON, N., c/o Director of Medical and Sanitary Services, Dar es Salaam, British East Africa.
 DAVIES, C. S., c/o The Director of Medical and Sanitary Services, Nairobi, Kenya Colony.
 EVANS, F. T., Gordon House, 37, Welbeck Street, W. 1 (after April 1st).
 HOGGEN, G. H., 6, Palace Gardens Terrace, W. 8. (Tel. Park 5533.)
 PEARSON, L. V., 554, Musgrave Road, Durban, Natal, S. Africa.
 STRUGNELL, Surg.-Comdr. L. F., R.N., R.N. Hospital, Malta.
 WORBOYS, T. S., 57, Woodlands Road, Darlington.

APPOINTMENTS

- BOUCAUD, J. E. A., M.B., B.S.(Lond.), appointed Resident Surgeon to the Colonial Hospital, Port of Spain, Trinidad.
 CHILTON, N., M.B., B.Ch.(Oxon.), appointed Medical Officer, East African Medical Service.
 DAVIES, C. S., M.R.C.S., L.R.C.P., appointed Medical Officer, East African Medical Service.
 FREEMAN, E. A., M.B., B.S.(Lond.), F.R.C.S., appointed Assistant Surgeon to Queen's Hospital for Children, Hackney Road, E.
 WILLIAMS, H. C. MAURICE, M.R.C.S., L.R.C.P., D.P.H., appointed Deputy Medical Officer of Health for the County Borough, and Port of Southampton.

BIRTHS.

- BLOUNT.—On March 16th, 1929, at 27, Welbeck Street, to Muriel Gladys, wife of Douglas Arthur Blount, M.B., of "Moreton House," Dunstable—a son.
 DAY.—On March 10th, 1929, at Surrey Street Nursing Home, Norwich, to Gwendolin (*née* Dawbarn), wife of Dr. George H. Day, of Acle—a son.
 EBERLIE.—On March 6th, 1929, at Flint Cottage, Luton, to Dr. and Mrs. W. F. Eberlie—a daughter.
 HANCOCK.—On March 8th, 1929, at 15, Holland Villas Road, to Estelle, wife of F. R. T. Hancock, of St. Paul's Cray Hill—the gift of a daughter (Penelope Estelle).
 HORSFORD.—On March 13th, 1929, at 24, Harley Street, W. 1, to Edith, wife of Cyril Horsford, M.D., F.R.C.S.—a son.
 LANDAU.—On February 28th, 1929, at 64, Perak Road, Penang, to Marjorie (*née* Gubbay), wife of Dr. J. V. Landau—a son.
 WELLS.—On February 15th, 1929, to Joyce, wife of J. Pascoe Wells, M.B., Belvedere House, Danbury, Essex—a son.

DEATHS.

- BULLAR.—On January 23rd, 1929, John Follett Bullar, F.R.C.S., of Houmet du Nord, Vale, Guernsey, aged 76.
 COLLINGRIDGE.—In February, 1929, William Rex Collingridge, M.R.C.S., L.R.C.P., of Silverdale, Sutton-on-Sea, aged 47.
 COOMBS.—On March 3rd, 1929, at Bedford, Rowland Hill Coombs, M.D., M.R.C.P., D.L., J.P., aged 84.
 DE HAVILLAND HALL.—On January 27th, 1929, at 57, Waldegrave Park, Twickenham, of pneumonia, after a week's illness, Francis de Havilland Hall, M.D., aged 81.
 EDDISON.—On January 27th, 1929, at Woodcroft, Cuckfield, Sussex, John Edwin Eddison, M.D., formerly of Adel, Leeds, aged 86.
 EVILL.—On March 3rd, 1929, at 18, Warwick Gardens, Worthing, Dr. Frederick Claude Evill, of The Lodge, High Barnet.
 HILL.—On February 27th, 1929, at Granta, Upper Bassett, Southampton, Alex Hill, M.A., M.D., F.R.C.S., F.R.C.P., O.I.P., some time of Cambridge, of Southampton, and lately Secretary of the Universities Bureau of the British Empire.
 HUME.—On February 12th, 1929, at Vron, Bangor, N. Wales, Douglas Walter Hume, M.B., B.S.(Lond.), F.R.C.S.(Eng.), beloved husband of Dorothy Ann, and eldest son of the late Walter Augustus Hume, M.R.C.S., L.S.A., aged 47.
 KENDALL.—On March 5th, 1929, at Chiddingfold, Nicholas Fletcher Kendall, M.R.C.S., L.R.C.P., aged 59.
 MOLONY.—On February 20th, 1929, at Kerman, Persia, of enteric, E. F. Molony, M.R.C.S., L.R.C.P., Missionary, C.M.S., son of Lt.-Col. F. A. Molony, of 8, Selwyn Gardens, Cambridge.
 RIVIERE.—On March 6th, 1929, at 19, Queen Anne Street, W. 1, of pneumonia, Clive Riviere, M.D., F.R.C.P., second son of the late Briton Riviere, R.A., aged 56.

NOTICE.

All Communications, Articles, Letters, Notices, or Books for Review should be forwarded, accompanied by the name of the sender, to the Editor, ST. BARTHOLOMEW'S HOSPITAL JOURNAL, St. Bartholomew's Hospital, E.C. 1.

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All Communications, financial or otherwise, relative to Advertisements ONLY should be addressed to ADVERTISEMENT MANAGER, The Journal Office, St. Bartholomew's Hospital, E.C. 1. Telephone: City 0510.